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[54] **SYSTEM AND METHOD FOR PROVIDING ACCURATE VEHICLE POSITIONING USING SPATIAL BIAS TECHNIQUES**

[75] Inventors: **Christos T. Kyrtsos**, Peoria; **Adam J. Gudat**, Edelstein; **Dana A. Christensen**, Peoria; **Douglas W. Friedrich**, Pekin; **Darrell E. Stafford**, Dunlap, all of Ill.

[73] Assignee: **Caterpillar Inc.**, Peoria, Ill.

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Related U.S. Application Data

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[52] U.S. Cl. 364/449; 364/460; 342/357; 342/457

[58] Field of Search 364/449, 453, 364/424.02, 443, 460; 340/988, 990; 342/450, 451, 352, 356, 357, 358, 457

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Primary Examiner—Collin W. Park
Attorney, Agent, or Firm—Sterne, Kessler, Goldstein & Fox

[57] **ABSTRACT**

A vehicle position determination system and method provide accurate vehicle positioning using a global positioning system. Spatial bias techniques are used to improve positioning accuracy while the vehicle is in the midst of a relatively linear path and is not approaching a drastically nonlinear path. The use of spatial bias techniques is suspended while the vehicle is approaching or in a drastically nonlinear path.

17 Claims, 93 Drawing Sheets
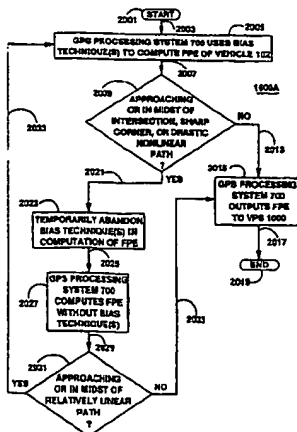
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105 —

PSEUDOLITE(S)   GPS SATELLITES

└—104

192   107   110

VEHICLE

VEHICLE POSITIONING SYSTEM (VPS)

MOTION POSITIONING SYSTEM (MPS)

VEHICLE ODOMETER   —902

904 ─

INERTIAL REFERENCE UNIT (IRU)

GPS PROCESSING SYSTEM

└—700

MPS INTER COMMUNICATIONS PROCESSOR

GYROS   —106

108 ─

ACCELEROMETERS

906

└—900

190

112—

114

194

VPS PROCESSING SYSTEM   116

1000—

118

HOST PROCESSING SYSTEM

└—186

NAVIGATION SYSTEM

—196   └—1022

└—102

100